

PROJECT NUMBER: 6505  
PROJECT TITLE : Special Investigations and Methods Development  
PROJECT LEADER: William R. Harvey  
PERIOD COVERED: August, 1984

#### I. HIGH PERFORMANCE THIN LAYER CHROMATOGRAPHY

Anticircular chromatography was discontinued because of overloading with nicotine. A return to a linear form of chromatography appears adequate for our needs for alkaloids separation.

#### II. AMMONIUM ION IN SMOKE

Ion chromatographic parameters for the determination of ammonium ion in trapped smoke solutions have been determined. There is linearity in the range of 1-5ppm ammonium concentration and ammonium ion can be seen on trapped smoke solutions. A smoking machine has been assembled and calibrated for puff volume and duration for use by Project 1752.

#### III. ORGANIC ACIDS IN TOBACCO LEAF

Better agreement with the gas chromatographic procedure for malic acid was achieved by using the normal anion column rather than the ion exclusion column (ICE). Evidently, there is a coeluting compound which interferes in the ICE determination.

#### IV. SUPERCRITICAL FLUID CHROMATOGRAPHY (SFC)

Poor precision for the SFC determination of propyl and heptyl parabens was traced to a low slope sensitivity integrator setting. Better precision was realized by hand reading. A visit was made to Dr. Milton Lee's laboratory at Brigham Young University to learn to operate and troubleshoot the capillary SFC being built for us. Problems still exist in bringing the system up.

#### V. PHOSPHINE SCRUBBING OF FUMIGANT EXHAUSTS

Efforts are in progress to determine the most practical way of scrubbing phosphine ( $\text{PH}_3$ ) before it is released to the environment. Both liquid and solid scrubbers are<sup>3</sup> being considered. Both modes appear to rely on the ultimate conversion of phosphine to phosphate.

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